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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,474	03/25/2004	Seigo Nakao	65933-075	6307

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Washington, DC 20005-3096

EXAMINER

CHOW, CHARLES CHIANG

ART UNIT	PAPER NUMBER
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2618

DATE MAILED: 08/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/808,474	<b>Applicant(s)</b> NAKAO ET AL.	
	<b>Examiner</b> Charles Chow	<b>Art Unit</b> 2618	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-12 and 15-36 is/are allowed.
- 6) ☒ Claim(s) 1, 13 and 14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **Detailed Action**

#### **Title**

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The current title, "Transmission Method and Radio Apparatus utilizing the same", is not descriptive for the key features of the invention, for the downlink transmitting antenna weight is derived from the received response characteristics, the correcting transmitting weight & the predicting the power level received at the remote terminal, to maintain a constant receiving power level at the remote terminal.

### **Claim Rejections - 35 USC § 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:  
A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Hiramatsu (US 6,512,917 B1).

**For claim 1**, Hiramatsu discloses a radio apparatus [Fig. 5], including

a processing unit [315-316, 317-318, 312, 322, 328-329, 324, 326] which performs an adaptive array processing on signals to be transmitted [user transmitted data in Fig. 5] to a predetermined terminal apparatus [the communication counterpart, col. 7, lines 35-43, Fig. 5]; and

a transmitter which transmits to the terminal apparatus the signals processed by said processing unit [col. 7, lines 25-44],

wherein said processing unit controls transmission power [ gain controlling circuit 321 control the gain of the transmission power, col. 6, lines 54-58 & col. 6 lines 40-67] in such a manner that received power at the terminal apparatus is kept approximately constant [col. 2, line 16 & lines 13-29, abstract].

**For claim 13**, Hiramatsu teaches a transmission method [col. 1, lines 7-10 & col. 2, lines 13-29] which controls transmission power in such a manner that reception power received at a predetermined terminal apparatus remains approximately constant [ embodiment 3, Fig. 5 & col. 9, lines 36-47],

when an adaptive array processing is performed on signals to be transmitted to the terminal apparatus [col. 7, lines 25-43].

3. Claim 14 is rejected under 35 U.S.C. 102(e) as being anticipated by Kohno et al. (US 6,763,062 B1).

**For claim 14**, Kohno et al. [Kohno] teaches a transmission method [Fig. 2-7, abstract] which computes based on a received signal from a radio apparatus which is a targeted communication party [ terminal station N3, N11, Fig. 1],

a transmission weight factor for the radio apparatus, estimates the magnitude of variation in reception power of the radio apparatus from the received signal and the computed transmission weight factor [ the microprocessor 57 calculates transmit weight values based no the received level monitored by 55 in col. 6, lines 19-34; the detecting the variation in receiving condition in col. 3, lines 1-16] and

which transmits signals to the radio apparatus with the computed transmission weight factor if the magnitude of variation in the reception power is less than a predetermined threshold value [ the transmitting a signal by using recalculated transmission weight, to alter amplitude & phase of antenna element, when the monitored received signal falls below a predetermined threshold in col. 6, lines 4-34, abstract ] and

transmits signals to the radio apparatus with a transmission weight factor that has been used so far if the magnitude of variation in the reception power is greater than or equal to the predetermined threshold value [ the transmitter 50 of base station transmitting signal terminal based on the stored weight values read from storage table 49 for the amplitude & phase weighting factor, as the weight factor has been used so far from storage table 49, col. 5, line 58 to col. 6, line 3].

#### **Allowable Subject Matter**

4. The following is an examiner's statement of reasons for allowance:

Claims 2-12, 15-36 are allowable over the prior art of record. The prior arts fail to teach the allowable features, singly, particularly, or in combination, or rendering obvious,

for the features in independent **claims 2, 3, 6, 15, 16, 19, 26, 27, 30, a predicted power computing unit** which computes, from the candidate of transmission weight factor and the received response characteristic, **a predicted receiving power value in the terminal apparatus, a correction unit,**

a setting unit which **updates, memory, and sets the transmission weight factor** to the candidate, the corrected candidate, the corrected first candidate, of transmission weight factor computed by said transmission weight factor computing unit, by updating a second candidate of transmission weight factor, **if a difference between a *predicted receiving power value in the past* stored in said storage and the predict ed receiving power value**

**computed** by said predicted power computing unit **is less than a predetermined threshold value** and which sets without updating the transmission weight factor **if the difference thereof is greater than or equal to the predetermined threshold value**; and a transmitter which transmits signals to the terminal apparatus based on the transmission weight factor set by said setting unit, for a program executable by computer, including the functions of above, or a radio apparatus including a received response characteristics computing unit, a transmission weight factor computing unit;

the features in independent **claims 12, 25, 36**, a measuring unit, **measures the magnitude of variation in power** of the received signals; a transmission weight factor computing unit which computes, from the received signals, a transmission weight factor for the terminal apparatus; and a transmitter which transmits signals, based on the transmission weight factor computed by said transmission weight factor computing unit, **via the plurality of antennas if the magnitude of variation in power measured by said measuring unit is less than a predetermined threshold value and**

which **transmits signals via one of the plurality of antennas if the magnitude of variation in power measured by said measuring unit is greater than or equal to a predetermined threshold value**, for a radio apparatus including a receiver receives signals via plurality of antennas, a measuring unit measures the magnitude of variation in power of received signals, a transmission weight factor computing unit;

The closest prior art **Hiramatsu (US 6,512,917 B1)** teaches, in Fig. 5, the 315-316 of the receiving portion & gain control 321, for providing information to transmission weight calculate 322 for generate transmit weight, & gain controlling circuit 321 for controlling the gain of the transmission power, col. 6, lines 54-58 & col. 6 lines 40-67, in such a manner

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that received power at the communication counter part becomes constant [col. 2, line 16 & lines 13-29, abstract]. Hiramatsu fails to teach the above allowable features.

**Kohno et al. (US 6,763,062 B1)** teaches a transmission method [Fig. 2-7, abstract] based on a received signal from terminal station N3, N11 [ Fig. 1], the microprocessor 57 calculates transmit weight values based no the received level monitored by 55 in col. 6, lines 19-34; the detecting the variation in receiving condition in col. 3, lines 1-16] and the transmitting a signal by using recalculated transmission weight, to alter amplitude & phase of antenna element, when the monitored received signal falls below a predetermined threshold [ col. 6, lines 4-34, abstract ], the transmitter 50 of base station transmitting signal terminal based on the stored weight values read from storage table 49 for the amplitude & phase weighting factor, as the weight factor has been used so far from storage table 49 [col. 5, line 58 to col. 6, line 3], but fails to teach above allowable features.

**Chung et al. (US 7,079,867 B2)** teaches, in Fig. 4, the base station calculates the transmitting weight factor at 425 based on the forward fading power calculator 422, angle array vector calculator 423 from the information provided by the rake receiver [col. 12, lines 36-51 & col. 6, lines 46 to col. 7, line 3, abstract], but fails to teach the allowable features in above.

The dependent claims are also allowable due to their dependency upon the independent claim and comprising additional claimed features associated to the features of the independent claims.

Other cited prior arts in below were also considered, but they fail to teach the above allowable features.

Whinnett (US 6,192,256 B1), Miya (US 7,020,455 B1), Kikuchi (US 2002/0070,892 A1), Miyoshi (US 20020151,301 A1), Hamalainen et al. (US 2005/0260,954 A1), Ide et al. (Us

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2003/0148,744 A1), Harrison et al. (US 6,434,366 B1), Matsuoka et al. (US 2004/0235,421 A1), Lim (US 6,049,307), Ozluturk et al. (US 6,940,840 B2), Yamaguchi et al. (US 2002/0039,912), Lomp (US 6,983,009 B2), Hwang et al. (2004/0213,353 A1), Miyoshi (US 2005/0117,520 A1), Doi (US 2005/0239,507 A1), Hayashi et al. (US 2004/0240,410 A1).


Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

#### Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Chow whose telephone number is (571) 272-7889. The examiner can normally be reached on 8:00am-5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Charles Chow *L.C.*

July 31, 2006.

  
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